CHAPTER 1

INTRODUCTION

Although the MK 19 is a recent entry into the Army's inventory, development began in 1963. The first version was a hand-cranked, multiple grenade launcher called the MK 18. In 1966 the need for more firepower inspired the development of a self-powered 40-mm machine gun called the MK 19, MOD 0. This model was neither reliable nor safe enough for use as a military weapon system. Product improvements begun in 1971 resulted in the 1972 MOD 1, of which only six were produced. The MOD 1 performed effectively in Navy riverine patrol craft and broader applications for the MK 19 were found. In 1973 the Navy developed the MOD 2, which featured improved reliability, safety, and maintainability. In 1976 a complete redesign resulted in the MK 19, MOD 3, which the Army adopted in 1983. The Army now uses the MK 19 within the tactical environment for defense, retrograde, patrolling, rear area security, urban operations, and special operations.

This chapter provides applications, training strategies, and descriptive, technical, and operational data for the MK 19 (Figure 1-1).

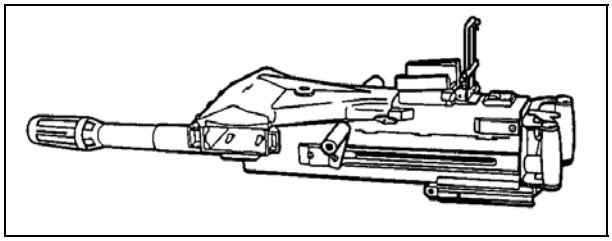

Figure 1-1. MK 19, 40-mm grenade machine gun, MOD 3.

1-1. APPLICATIONS

The MK 19 supports the soldier in both the offense and defense. It gives the unit the capability of laying down a heavy volume of close, accurate, and continuous fire. The MK 19 can also:

- Protect motor movements, assembly areas, and supply trains in a bivouac.
- Defend against hovering rotary aircraft.
- Destroy lightly-armored vehicles.
- Fire on suspected enemy positions.
- Provide high volumes of fire into an engagement area (EA).
- Cover obstacles.
- Provide indirect fires from defilade positions.

1-2. DESCRIPTION

The MK 19 is an air-cooled, blowback-operated machine gun with five major assemblies (Figure 1-2). A disintegrating metallic link belt feeds ammunition through the left side of the weapon. Tables 1-1 and 1-2 provide MK 19 technical and operational data, respectively.

a. **Receiver Assembly.** Holds the barrel and other parts of the gun. Ammunition is fed into the left side of the receiver through the feed throat assembly. The MK 19's barrel will not overheat, even after prolonged firing.

b. **Feed Slide Assembly and Tray.** Holds the rounds in the feeder and indexes the ammunition into position for delinking.

c. **Top Cover Assembly.** Holds the feed slide assembly and tray. It is opened by a latch (left side) for loading or to clean and inspect feeder area. A blade-type front sight is attached to the top cover assembly (Figure 1-3).

d. **Sear Assembly.** Holds the receiver sear. Trigger action releases the sear and allows the bolt to go forward. The safety is attached to the sear assembly.

e. **Bolt and Backplate Assembly.** The bolt fires the round when the sear is depressed by trigger action. The recoil springs drive the bolt forward on the receiver rails. The guide rods hold the springs in position. Trigger and handgrips are located on the backplate assembly.

f. **Feed Throat Assembly.** Allows smooth feeding of 40-mm ammunition. It attaches to the forward left side of the receiver by two sets of spring-loaded retaining pins. Without a feed throat, machine gun stoppages may occur because of twisted or misaligned rounds.

g. **Leaf-Type Rear Sight (with adjustable range plate).** Is marked in 100-meter intervals from 300 to 1,500 meters. The sight is mounted on a spring dovetail base to the receiver assembly (Figure 1-4). Before moving the weapon, the gunner folds the sight forward to a horizontal position. The rear sight can be adjusted for range and windage.

(1) ***Range.*** Different adjustments can be made to the range. Use the rear sight slide release to make *major adjustments* to the range. Use the elevation wheel to make *fine adjustments* to the range.

(2) ***Windage.*** Use the rear sight to adjust for windage. One click equals a 1-mil change. To move the sight to the *right*, turn the windage screw clockwise. To move the sight to the *left*, turn the windage screw counterclockwise.

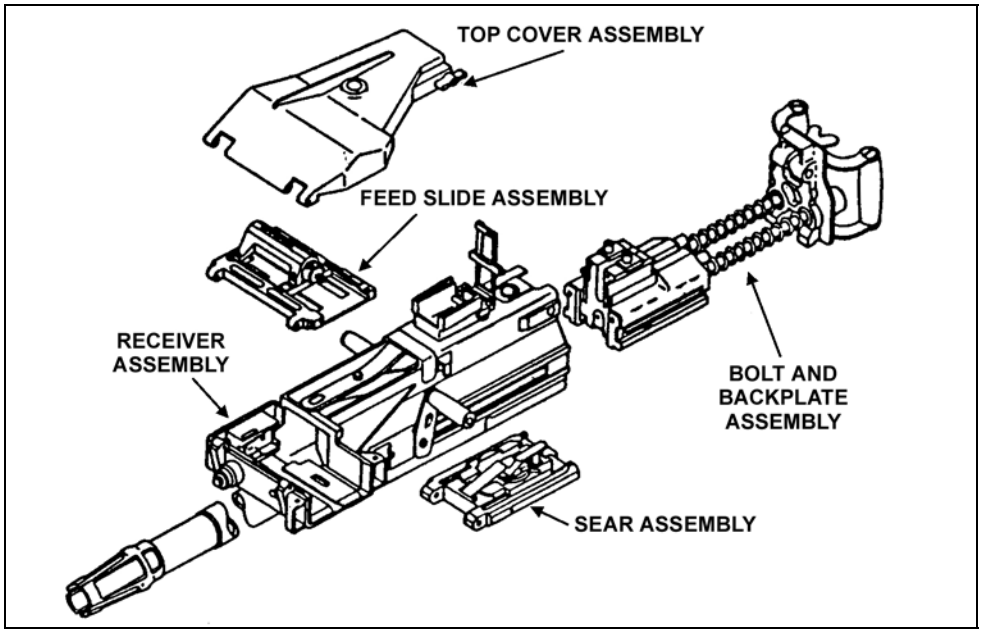

Figure 1-2. Five major assemblies.

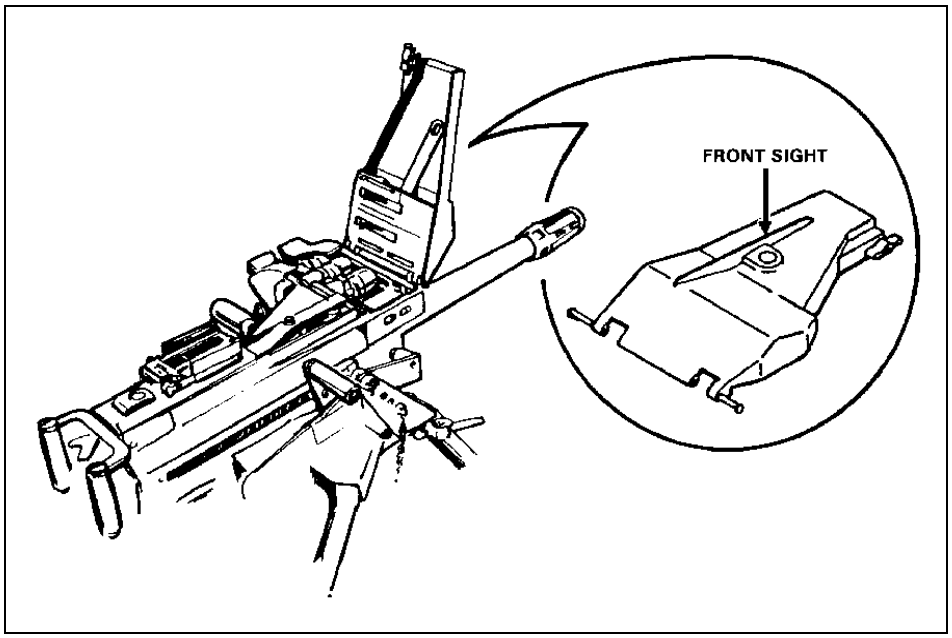

Figure 1-3. Front sight on top cover assembly.

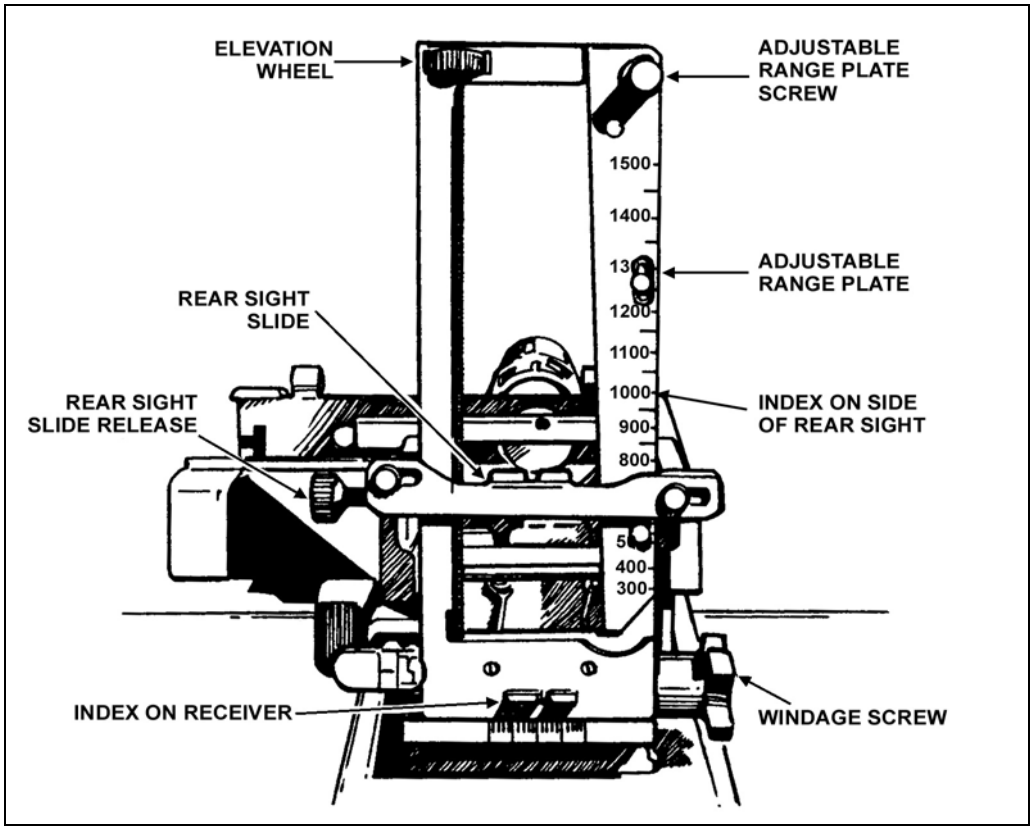

Figure 1-4. Rear sight.

WARNING

Use only prescribed ammunition. Mixing types of ammunition could result in injury.

h. The MK 19 uses the following 40-mm cartridges (Figure 1-5, page 1-8).

(1) ***High-Explosive, Dual-Purpose M430 Cartridge.*** The high-explosive, dual-purpose (HEDP) M430 cartridge is the standard round for the MK 19 (Department of Defense Identification Code [DODIC] B542). They are linked with M16A2 links. The HEDP round, the top-curved portion of the projectile, is olive drab with a yellow ogive and yellow markings. It is packed in M548 (48 rounds) or PA120 (32 rounds) ammunition containers. The HEDP, an impact-type round, can penetrate 2 inches of steel armor at 0-degree obliquity and inflict personnel casualties out to 15 meters from impact. It arms within 18 to 30 meters of the gun muzzle and has a point-initiating, base-detonating (PIBD) fuze.

(2) ***High-Explosive M383 Cartridge.*** The high-explosive (HE) M383 cartridge round is olive drab with a yellow ogive and yellow markings. It is packed in a metal ammunition container (48 rounds, linked, in each container). The HE round has a wound radius of 15

meters. It lacks the armor-penetrating ability of the HEDP M430 round. The HE arms between 18 to 36 meters of the gun muzzle fuze.

(3) ***M922 Dummy Cartridges.*** Each MK 19 is issued with one 10-round of inert dummy rounds belt (DODIC B472). M16A2 links join the dummy rounds into a 10-round belt packed in an M2A1 metal box. Trainers use dummy rounds to check weapon function and to train crews.

(4) ***M918 Cartridge.*** The M918 is a training practice cartridge that has the same muzzle velocity of 790 feet per second (fps), signature, and sound as the HE round (DODIC B584).

MK 19 TECHNICAL DATA		
MK 19 (MOD 3):		
Weight without feed throat	77.6	pounds
Weight with feed throat	78.0	pounds
Length	43.1	inches
Width	14.0	inches
Height	8.8	inches
MK 64 (MOD 7) gun cradle:		
Weight	21.0	pounds
Length	17.5	inches
Height	9.5	inches
Tripod (M3) weight:	44.00	pounds
Gun and cradle:		
Weight without feed throat	98.6	pounds
Weight with feed throat	99.0	pounds
Gun, cradle, and tripod:		
Weight without feed throat	142.6	pounds
Weight with feed throat	143.0	pounds

Mounts:	**Ammunition:**
M3 tripod	M430 (HEDP)
M4 pedestal	M383 (HE)
M66 ring	M918 (TP)
HMMWV weapon platform	M922 (dummy)
M113 APC commander's cupola	

NOTE: Keep the feed throat attached to the weapon.

Table 1-1. Technical data.

MK 19 OPERATIONAL DATA		
Maximum range:	2,212	meters
Maximum effective range:	1,500 2,212	meters (point target) meters (area target)
Rates of fire:		
Sustained	40	rounds per minute
Rapid	60	rounds per minute
Cyclic	325 to 375	rounds per minute
Ammunition:		
M430 HEDP	2	inch armor
	15	meter casualty radius
M383 HE	15	meter casualty radius
Service frequency:	50,000	rounds
Elevation, tripod controlled:	100	mils
Depression, tripod controlled:	258	mils
Traverse, tripod controlled:	800	mils (400 left plus 400 right)
Muzzle velocity (average):	798	feet per second
Recoil forces (average):	500	pounds
Angle of automatic fire:	0 to 70	degrees elevation (automatic fire), based on mounting arrangements
Weights:		
Rounds	62	pounds (48 rounds in M548 metal container)
	42	pounds (32 rounds in PA120 metal container)
Planned operating load	400	prescribed by local commanders

Table 1-2. Operational data.

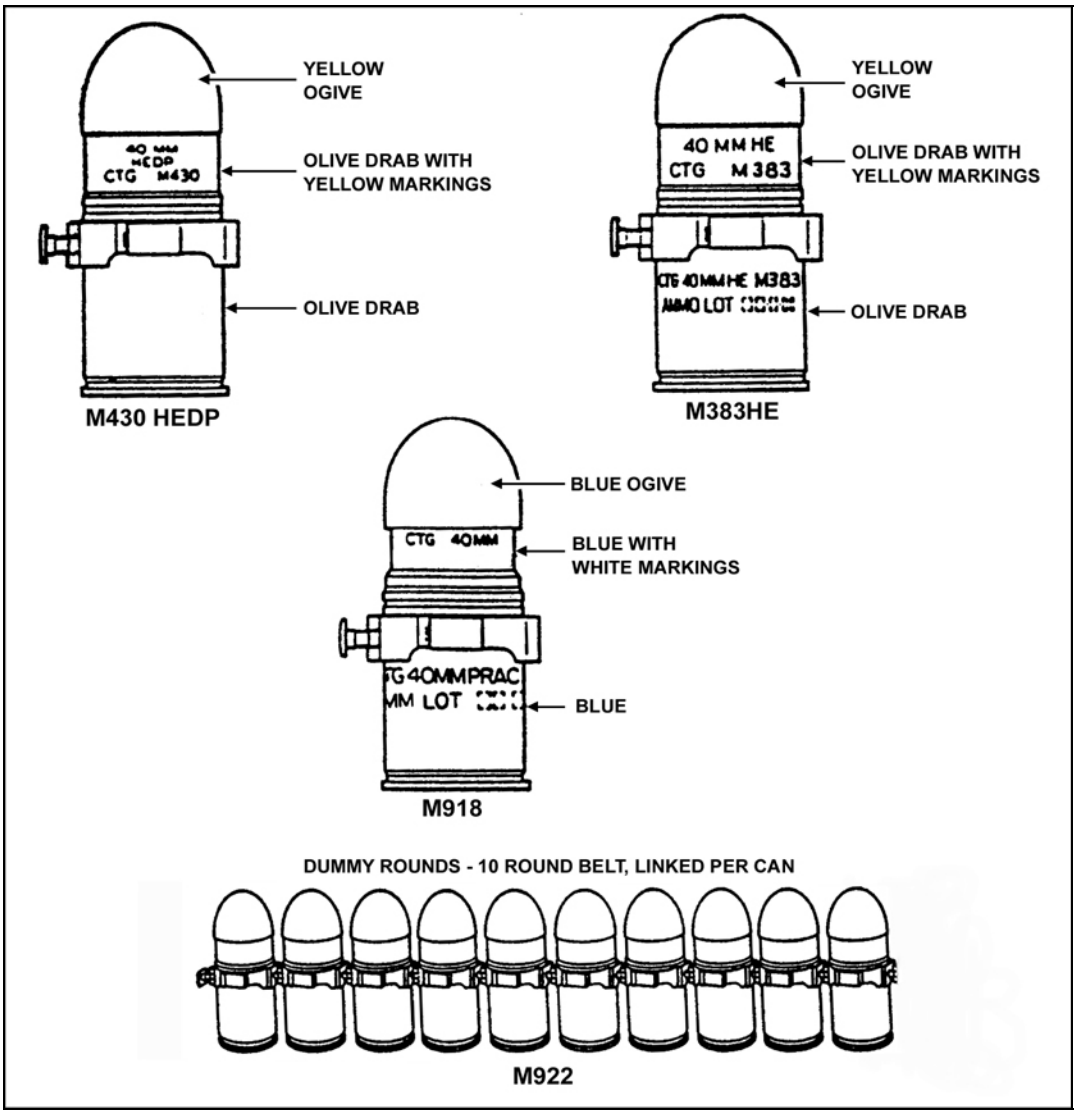

Figure 1-5. 40-mm cartridges.

1-3. TRAINING STRATEGY

A training strategy that integrates resources with the instruction and training of individual and collective skills is necessary to carry out a unit's wartime mission. TRADOC institutions, such as the noncommissioned officers education system (NCOES), and units implement overall training strategies for the MK 19. This multifaceted approach includes specific plans for using resources such as publications, ranges, ammunition, training aids, devices, simulators, and simulations. These specific strategies develop critical soldier skills and training tasks, as well as leader skills needed to support the intended outcome (see Appendix A, Training Strategy, for more details).